CLAIMS

1. A process for manufacturing an anti-reflection film comprising a film substrate and a low-refractive index layer, comprising the steps of:

applying a coating solution comprising (a) coated fine particles composed of inorganic fine particles substantially made of an oxide of at least one element selected from the group consisting of Si, Al, Ti and Zr and an organic polymer for covering the surfaces of the inorganic fine particles, (b) a binder resin and (c) an organic solvent which has a boiling point of 100°C or higher and is miscible with water to at least one side of the film substrate; and

drying the coating layer to form the low-refractive index layer having voids.

2. The process according to claim 1, wherein the coating solution further contains an alkoxy compound represented by the following formula:

$(R^1O)_nMR^2_{m-n}$

wherein R^1 and R^2 are each independently an alkyl group having 1 to 4 carbon atoms, M is Al, Si, Ti or Zr, m is a number equivalent to the valence of M, and n is an integer of 2 to m,

and the organic solvent (c) is miscible with water.

3. The process according to claim 1, wherein the coating solution contains a crosslinking agent for the binder resin (b) to crosslink and cure the binder resin (b) when the coating layer is dried.

4. The process according to claim 1, wherein the organic solvent is a ketone-based organic solvent.

5. The process according to claim 1, wherein the

low-refractive index layer contains a fluorine atom and a silicon atom.

6. The process according to claim 1, wherein the average particle diameter of the coated fine particles is 5 to 200 nm.

7. The process according to claim 1, wherein the organic polymer for covering the surfaces of the inorganic fine particles is at least one selected from the group consisting of alkyl-based polymers, polymers having a urethane bond, polymers having an ester bond, polymers having an ether bond and acrylic polymers.

8. The process according to claim 1, wherein the organic polymer for covering the surfaces of the inorganic fine particles has a polysiloxane group having at least one alkoxy group.

9. The process according to claim 1, wherein the content of the organic solvent in the coating solution is at least 70 % based on the weight of the coating solution, and the solid content of the coating solution is 0.5 to 10 %.

10. The process according to claim 1, wherein a hard coat layer is formed on one side of the film substrate, and the low-refractive index layer is formed on at least one side of the film substrate having the hard coat layer.

11. An anti-reflection film comprising a film substrate and a low-refractive index layer which has voids and is formed on at least one side of the film substrate, wherein

the low-refractive index layer is made of (a) coated fine particles composed of inorganic fine particles

substantially made of an oxide of at least one element selected from the group consisting of Si, Al, Ti and Zr and an organic polymer for covering the surfaces of the inorganic fine particles and (b) a binder resin and has a refractive index of 1.10 to 1.29.

12. The anti-reflection film according to claim 11, wherein the low-refractive index layer contains a fluorine atom and a silicon atom.

13. The anti-reflection film according to claim 11, wherein the film substrate is made of at least one selected from the group consisting of polyethylene terephthalate and triacetyl cellulose.

14. The anti-reflection film according to claim 11, wherein the thickness of the low-refractive index layer is 10 to 150 nm.

15. The anti-reflection film according to claim 11, wherein a hard coat layer is formed between the film substrate and the low-refractive index layer or the side devoid of the low-refractive index layer of the film substrate.

16. Use of the anti-reflection film of claim 1 to be mounted on the screen of a display.

17. Use of the anti-reflection film of claim 16, wherein the display is a liquid crystal display.

18. Use of the anti-reflection film of claim 16, wherein the display is an organic EL display.

19. Use of the anti-reflection film of claim 16, wherein

the display is a plasma display.

20. Use of the anti-reflection film of claim 1 which is arranged on the inner side of the screen of a display.